FM STEREO TUNER

KT-3300D

INSTRUCTION MANUAL

KENWOOD

KENWOOD CORPORATION

Introduction

Your choice of this product indicates that you are a devotee to excellence in sound reproduction.
We appreciate your patronage and take pride in the long tradition of quality components that our company represents.
So that you can get the most out of your upit, we suggest that you take the time to read through this manual before you hook up and operate your system. This will acquaint you with operating features, and system-connection considerations, so that your listening pleasure will be enhanced right from the start. You will notice that in all aspects of planning, engineering, styling, operating convenience and adaptability, we have sought to anticipate your needs and desires.
Keep this manual handy for future reference.

For your records

Record the serial number, found on the back of the unit, in the spaces designated on the warranty card, and in the space provided below. Refer to the model and serial numbers whenever you call upon your dealer for information or service on this product.
Model _____ Serial Number _____

Unpacking

Unpack the unit carefully and make sure that all accessories and cables are put aside so they will not be lost.
Examine the unit for any possibility of shipping damage. If your unit is damaged or fails to operate, notify your dealer immediately. If your unit was shipped to you directly, notify the shipping company without delay. Only the consignee (the person or company receiving the unit) can file a claim against the carrier for shipping damage.
We recommend that you retain the original carton and packing materials for use should you transport or ship the unit in the future.

WARNING:
TO PREVENT FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

Safety precautions

CAUTION RISK OF ELECTRIC SHOCK DO NOT OPEN	CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.
	The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure; that may be of sufficient magnitude to constitute a risk of electric shock to persons.
	The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Before applying power

Important!

U.S.A. and Europe

Units shipped to the U.S.A. are designed for operation on 120 volts AC only. Units shipped to Europe are designed for operation on 220 volts AC only. These units are not equipped with an AC voltage selector switch and the discussion of such a switch that follows should be disregarded.

All other countries

Units shipped to countries other than the U.S.A. and Europe are equipped with an AC voltage selector switch on the rear panel. Refer to the following paragraph for the proper setting of this switch.

AC voltage selection

This unit operates on 120 volts or 220 – 240 volts AC. The AC voltage selector switch on the rear panel is set to the voltage that prevails in the area to which the unit is shipped. Before connecting the power cord to your AC outlet, make sure that the setting position of this switch matches your line voltage. If not, it must be set to your voltage in accordance with the following direction.

Note:
Our warranty does not cover damage caused by excessive line voltage due to improper setting of the AC voltage selector switch.

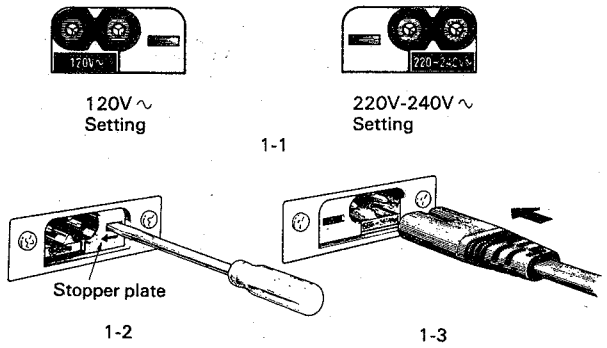


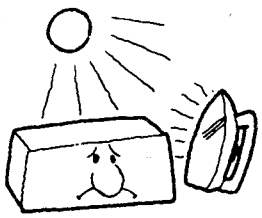
Fig. 1 AC voltage selector

1. Before plugging in this unit, make sure that the position of the AC voltage selector conforms to your line (mains) voltage. If not, it must be reset. See Fig. 1-1.
2. To reset the selector, slide the stopper plate to the opposite side with a screwdriver or other pointed tool. See Fig. 1-2.
3. Insert the power cord securely. See Fig. 1-3.

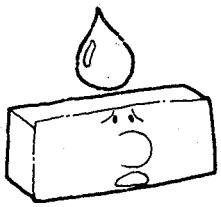
Before operation

Notes on installation

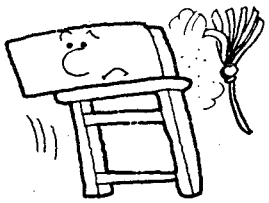
Do not place the unit in a place which is exposed to direct sunlight, near a heating appliance, etc.



Do not place a vase containing water, makeup, etc. on the unit. Do not use in a humid place.

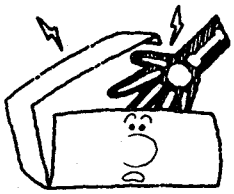


Choose a location that is relatively free from vibration or excessive dust.



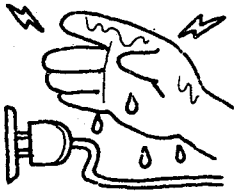
Safety precautions

Never remove the case. If the internal parts are touched, accidentally, a serious electric shock might occur.



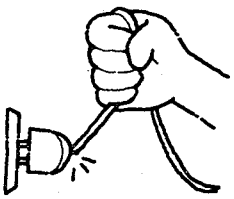
Never touch internal parts.

Touching the power plug when your hands are wet may result in a serious electric shock.



Never touch with wet hands.

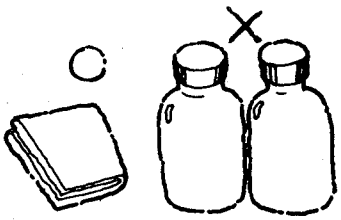
Never pull, bend or extend the power cord. This could damage the power cord, resulting in a broken cord or short-circuit.



Always grasp the plug.

Cleaning

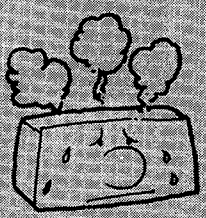
Do not use volatile solvents such as alcohol, paint thinner, gasoline, benzine, etc. to clean the cabinet. Use a silicone cloth or a clean dry cloth.



Silicone cloth Thinner Benzine

In case of abnormal smell

If an abnormal smell or smoke is detected, immediately turn the power OFF and pull out the power plug. Contact your dealer or nearest service station.



System connections

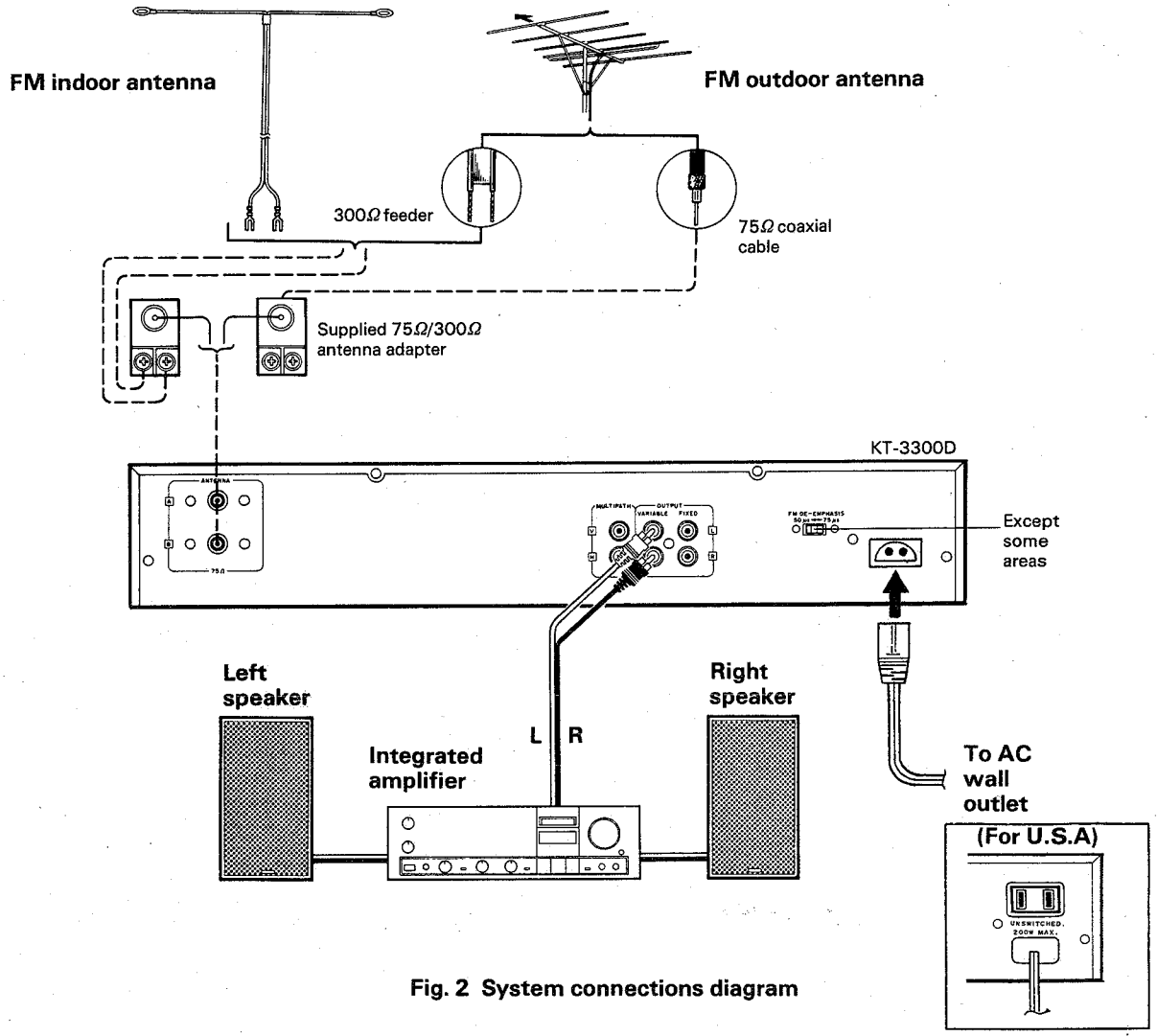


Fig. 2 System connections diagram

Output

Signals from the output jacks are fed to the amplifier. Connection cables should be plugged to the amplifier TUNER or AUX jacks. Shielded cables terminated at both ends with standard phono plugs are supplied with this tuner.

Note:

Two types of OUTPUT jacks are provided with this unit: VARIABLE OUTPUT jacks whose level can be adjusted with the OUTPUT LEVEL control on the front panel and FIXED OUTPUT jacks whose level cannot be adjusted. Normally connect the VARIABLE jacks to an amplifier.

Power cord

A low power is supplied to the memory to retain the memory contents when the POWER switch is set to OFF.

FM indoor antenna

Connect the T-shaped indoor antenna (supplied) to the 75Ω FM ANTENNA terminals as shown in **System connections diagram**. Spread the two arms that form the top of the "T" horizontally and hold them against convenient wall surfaces. Try several locations for best results on your desired stations. Tape the antenna in place where the best compromise is found between listening results and appearance.

FM outdoor antenna

Consult with your dealer or service man about the best method of selecting and erecting FM outdoor antenna.
The choice of lead-in (feeder) wire is also important. The flat ribbon-shaped twin lead performs well electrically, is cheaper and is somewhat easier to handle in routing through windows and around rooms. Though coaxial cable is more expensive, does a much better job of minimizing interference, is less prone to the effects of weather and close-by metal objects, and is nearly as good a signal conductor as the ribbon type wire. The latter is particularly true of foam-type coaxial cables. Coaxial cable is somewhat more difficult to install at the point where the cable enters the building. If coaxial cable is selected, make sure the antenna is designed to drive that type of cable.

75Ω coaxial cable connection

After stripping the end of your coaxial cable, RG-6 or RG-59 mount the supplied 75Ω/300Ω FM antenna adapter on the cable as shown. Then insert the plug into the 75Ω ANTENNA terminal on the rear panel as shown in **System connections diagram.**

300Ω ribbon type cable connection

Although the unit is designed exclusively for use with 75Ω coaxial cable, it can also accept a 300Ω indoor antenna or 300Ω ribbon-type lead-in cable by using the supplied 75Ω/300Ω antenna adapter. Strip the plastic insulation from the wire ends for about 10 mm (3/8 inch). Connect the wires to the terminals on the adapter, then insert it into the 75Ω ANTENNA terminal on the rear panel (see **System connections diagram**).

If you connect a 300Ω feeder cable, you need not detach the collar in the 75Ω/300Ω antenna adapter.

If the collar is detached, the sensitivity will decrease.

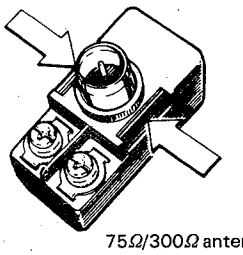
Note:

A FM outdoor antenna can be connected to the tuner with either a 75Ω coaxial cable or 300Ω ribbon feeder. For proper connection, carefully read the instruction manual for the FM outdoor antenna.

FM DE-EMPHASIS switch (rear panel) (Except some areas)

This switch has been set to the correct position for a given market area. However, check to see that this switch is set correctly before operating your tuner. An incorrect setting will adversely affect high-frequency performance.

Europe, Oceania and South Africa ..... 50 μs
Other countries..... 75 μs

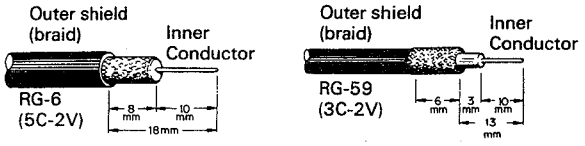


Press the claws in the direction of the arrows with the fingers to release the lock and pull out the cover.

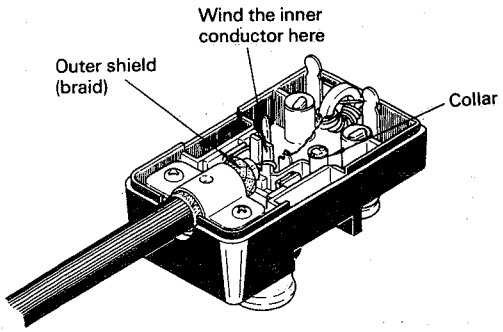
75Ω/300Ω antenna adapter (supplied)

Fig. 3 How to open the 75Ω/300Ω antenna adapter

1. Arrange the coaxial cable as illustrated.



2. Connect the processed coaxial cable to 75Ω/300Ω antenna adapter as shown below. In the case of RG-6, insert and wind the inner conductor around the slit. In the case of RG-59, further insert and wind the inner conductor around the slit. Detach the collar in the antenna adapter.



3. Put the collar on the pole in the cover.

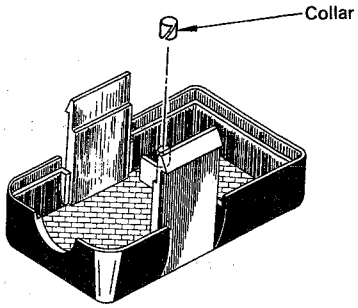


Fig. 4 75Ω antenna connection

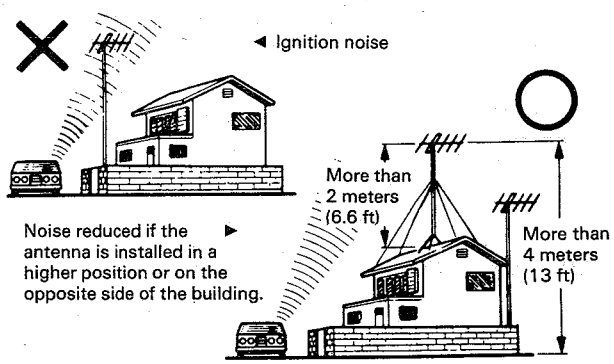

Ignition noise
More than 2 meters (6.6 ft)
More than 4 meters (13 ft)
Noise reduced if the antenna is installed in a higher position or on the opposite side of the building.

Fig. 5 FM outdoor antenna setting

Controls and indicators

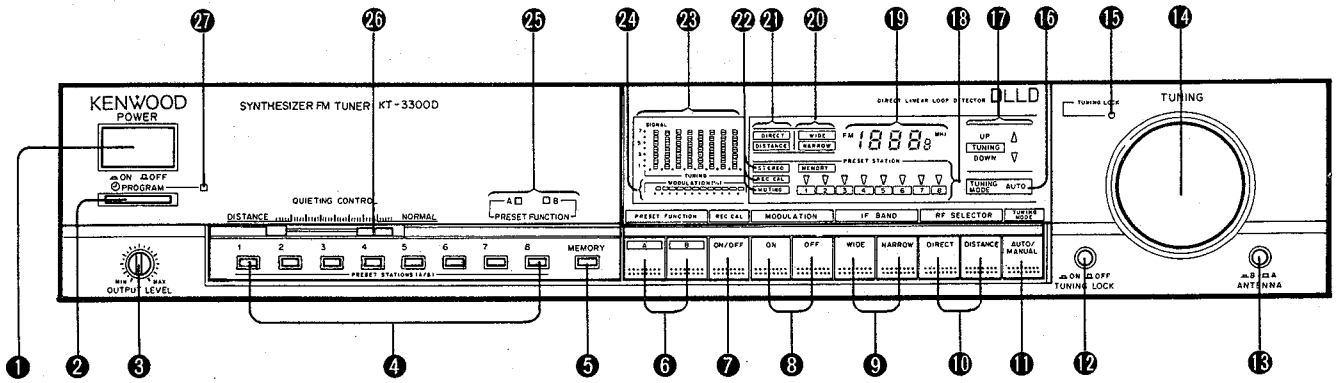


Fig. 6

❶ POWER switch
Press this switch to supply power. Press the switch again to turn the power off.

❷ PROGRAM switch
This switch function for Program operations. Each time the switch is pressed, the function is turned ON and OFF alternately.

❸ Output level control (OUTPUT LEVEL)
This control adjusts the level of the OUTPUT level from the output terminals on the rear panel. When set to MIN. the level is lowest and when set to MAX. the level is highest. It is used to match the level of the FM output signal to the levels of the signals from other source components (turntable, cassette deck, etc.) when the tuner is used together with an amplifier.

❹ PRESET STATION (A/B) switches
Two (A/B) FM stations can be stored in each PRESET STATION switch. When the switch is pressed, the PRESET STATION indicator lights and the stored frequency is displayed in the frequency display.

❺ MEMORY switch
When this switch is pressed, the MEMORY indicator lights and the unit stands by for preset station memory.

❻ Preset function switches
Select the preset station group between A (8 stations) and B (8 stations) with this switch.

❼ REC CAL switch
Use this switch to adjust the recording level of the tape deck for FM broadcast recording. When this switch is set to ON, the REC CAL indicator lights and a signal of about 400 Hz (equivalent to 50% FM modulation, 100% = 75 kHz dev.) is output at the OUTPUT jacks on the rear panel. With this signal, adjust the VU meter reading of the tape deck to –6 dB or 50%. After setting the level, be sure to set the switch to OFF.

❽ MODULATION switches
Press ON switch to display the modulation level. The MODULATION indicator lights. Press OFF switch to disappear the modulation level. The indicator goes off.

❾ IF BAND switches
Use these switches to select the pass band of the intermediate frequency between WIDE and NARROW.
WIDE: Set to this position for normal reception. High quality sound without distortion can be received.
NARROW: If the desired station is disturbed by a nearby station, set the switch to this position. Selectivity is improved, resulting in interference-free reception.

❿ RF SELECTOR switches
Along with the increase of stations, the RF intermodulation or intermodulation noise becomes serious. To prevent this, the RF SELECTOR switch is provided. It is recommended to use these switches together with the IF BAND switch for the best reception according to the receiving condition.
DIRECT: When this switch is pressed, the RF intermodulation or intermodulation noise will be reduced and the best quality sound is obtained. In a strong-signal area, set to this position for greater sound quality.
DISTANCE: When a distant station is required, set to this position. The receiving ability is improved so that the weak-signal station can be received with lower noise.

⓫ TUNING MODE switch
Each time this switch is pressed, the AUTO indicator lights and goes off.
AUTO indicator ON: For automatic tuning
AUTO indicator OFF: For manual tuning

⓬ TUNING LOCK switch
Use to lock the frequency being received. When this switch is set to ON, the received frequency does not change even when the TUNING knob is turned.

⓭ ANTENNA switch
This switch changes the antenna terminals A or B on the rear panel.

⑭ TUNING knob
FM stations are selected by turning this knob. In AUTO tuning mode, turn the knob slightly clockwise to scan the higher frequencies. Turn the knob slightly counterclockwise to scan the lower frequencies.
In MANUAL tuning mode, turn the knob while observing the TUNING SIGNAL indicator.

⑮ TUNING LOCK indicator
This indicator lights when the TUNING LOCK switch is set to ON.

⑯ TUNING MODE AUTO indicator
This indicator lights when the TUNING MODE switch is set to AUTO. During AUTO tuning, this indicator go on and off with changing of the frequency display.

⑰ UP/DOWN indicator
UP indicator lights when turn the TUNING knob clockwise, and turn the knob counterclockwise DOWN indicator lights.

⑱ MEMORY/PRESET STATION indicators
When the MEMORY switch is pressed, the MEMORY indicator lights. When the PRESET STATION button is pressed, the triangle mark above the corresponding number of the PRESET STATION indicator lights.

⑲ Frequency display
This display shows the received FM frequency digitally.
In MANUAL TUNING mode, turn the TUNING knob while observing this display.

⑳ IF band indicators
WIDE: Lights when the IF BAND switch is set to the WIDE position.
NARROW: Lights when the IF BAND switch is set to the NARROW position.

㉑ RF selector indicators
DIRECT: Lights when the RF selector DIRECT switch is pressed.
DISTANCE: Lights when the RF selector DISTANCE switch is pressed.

㉒ Operation indicators
STEREO: Lights when a stereo FM station is received.
REC CAL: Lights when the REC CAL switch is set to ON.
MUTING: Lights when the tuning knob or function switch are operated.

㉓ TUNING SIGNAL indicators
These indicators consist of the signal indicators in vertical direction and tuning indicators in horizontal direction, providing visual display of both signal and tuning conditions. When approaching the tuning point, the tuning indicator illumination increases from the end and the signal indicator illumination increases. When the station is precisely tuned, the signal strength is indicated at the center. When the station is detuned, these indicators operate in the reverse order.

Note:
If the signal strength is weak or the IF BAND switch is set to NARROW, the indications at both ends are less than 4 or the indication becomes asymmetrical.

㉔ MODULATION indicators
These indicators display the modulation condition.
The value exceeding point 7 is maintained.

Note:
This indicator is not lit when manually tuning a station with a weak-signal.

㉕ Preset function indicators
A or B indicator lights depending on the setting of the preset function switch.

㉖ QUIETING CONTROL knob
To improve the signal-to-noise ratio in stereo broadcast reception, this control allows the amount of blending between L and R channels to be controlled. When receiving a noisy station such as distant stations, set to DISTANCE. The S/N ratio of the station will be improved. (With this knob set at the left end, the receiving condition will be MONO.)
Normally set to NORMAL position.

㉗ Program indicator
This indicator lights when the PROGRAM switch is pressed ON.

Operating instructions

■ Auto tuning reception

1. Set the input selector of the amplifier to TUNER.
2. Press the POWER switch.
   The FREQUENCY DISPLAY lights and the frequency of the last station* is displayed.
3. Set the TUNING MODE switch so that the AUTO indicator lights.
4. To tune in the higher frequency station, turn the TUNING knob slightly clockwise. To tune in the lower frequency station, turn the TUNING knob slightly counterclockwise.
   The stations are automatically scanned and scanning stops at the marginal station. The TUNING SIGNAL indicators illuminate according to the signal strength and the tuned station can be heard.
5. Adjust the volume and tone of your amplifier.

***Last station**
As the memory of this unit is backed up, the frequency received before the power is turned off is memorized. This is referred to as the last station frequency. When the power is turned on again, the unit tunes in the last station frequency.

IF BAND switch

To receive a weak FM station, set the IF BAND switch to NARROW.

■ Manual tuning

Use manual tuning mode to receive a weak signal station.

1. Perform procedures 1 and 2 above.
2. Set the TUNING MODE switch so that the AUTO indicator goes off.
3. Turn the TUNING knob while observing the frequency display to tune in the desired station.
4. Adjust the volume and tone of your amplifier.

■ Preset tuning

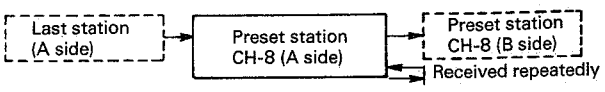
1. Receive a station.
2. Press the MEMORY switch. The MEMORY indicator lights for about 13 seconds.
3. While the MEMORY indicator lits, press one of the PRESET STATION switches.
   The MEMORY indicator goes off and the station being received is stored in the pressed PRESET STATION switch.

Perform the same procedures on other PRESET STATION switches.
To receive the preset station, press the corresponding PRESET STATION switch.

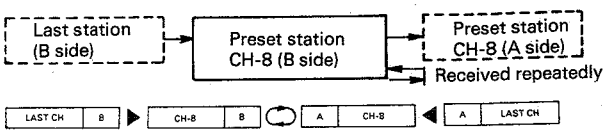
■ Program reception

This feature enables you to perform unattended recording of 3 different stations.
The program function of this unit functions as follows.

● When the last station is at A side



● When the last station is at B side



1. Set the audio timer so that power is supplied to the tuner.
2. Press the POWER switch.
3. Set the PROGRAM switch to OFF. (Confirm that the PROGRAM indicator is not lit.)
4. When the station to be received first is in A side, preset the station to be received second in CH-8 of A side..... (A)
   When the station to be received first is in B side, preset the station to be received second in CH-8 of B side..... (B)
5. In case of (A), preset the station to be received third in CH-8 of B side.
   In case of (B), preset the station to be received third in CH-8 of A side.
6. Tune to the station to be received first, taking care for the side of the preset station.
7. Set the PROGRAM switch to ON. The PROGRAM indicator lights.
8. Set the audio timer so that power is supplied to the tuner three times.
9. When the power is supplied first, the station received in step 6 is received. When the power is supplied second time, the station preset in step 4 is received. When the power is supplied third time, the station preset in step 5 is received. After this, the stations in CH-8 of A and B sides are received alternately.

Notes:

1. When the program reception is not carried out, be sure to set the PROGRAM switch to OFF (the PROGRAM indicator is not lit). If the PROGRAM switch is set to ON, the stations stored in preset station CH-8 switches are received each time the power is supplied.
2. To carry out program reception, supply power for more than 30 minutes to charge the memory back-up capacitor. The stored station is maintained for about 7 days. When the unit is not used for a long time and power is supplied, the frequency display sometimes displays the wrong frequency. This is not a malfunction and correct operation is resumed by tuning to a station.

■ Multipath reception

Multipath reflections result from the nature of radio waves in the FM band. They travel in straight lines and are reflected from hills, large metal structures and the like. When a signal is received after bouncing off a building, it arrives at the antenna later than the signal that came by a direct route. The addition of the direct and reflected signals produces complex variations in amplitude and phase throughout the broadcasting signal. The result can be audible distortion even though signal strength is high and tuning is correct. If audible distortion occurs on a particular channel even though the SIGNAL and TUNING meters indicate proper reception conditions, the cause may be multipath reception. To correct this condition a directional outdoor antenna should be installed following the suggestion given earlier in this manual. To adjust the antenna, proceed as follows:

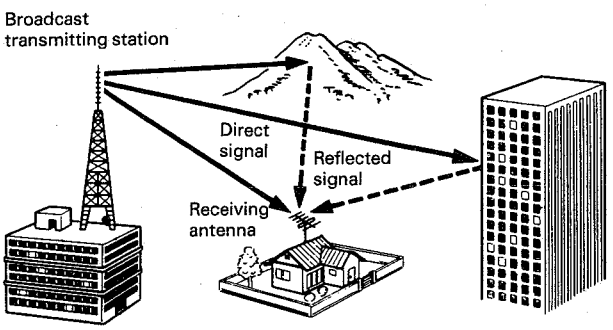


Fig. 7 Direct signal and reflected signal

Adjustment using an oscilloscope

1. Connect the [V] and [H] FM MULTIPATH jacks to the vertical and horizontal inputs, respectively, or the scope.
2. Tune in the affected station.
3. Loosen the antenna mounts and have someone orient the antenna for minimum vertical response as shown in Fig. 9 (b).

If multipath distortion cannot be corrected by this means, it might be necessary to use a more directional antenna, change antenna height or move the antenna mounts to another location on the building.

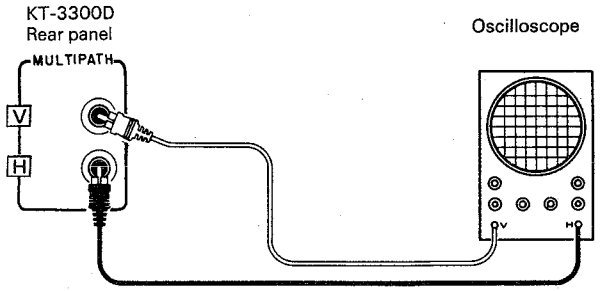
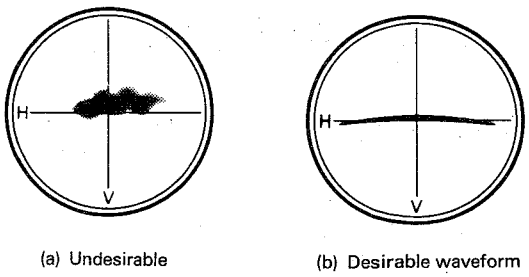


Fig. 8 Oscilloscope connection

Adjustment using an amplifier

1. Connect the [V] FM MULTIPATH jack to either left or right AUX jacks of the amplifier and set the amplifier input selector switch to AUX.
2. If a DC amplifier is used, it is advisable to use the amplifier as an AC amplifier. For example, with a Kenwood DC amplifier, set the DC COUPLED switch to OFF or SUBSONIC FILTER switch to ON.
3. Tune in the affected station. If the distorted sound occurs from the connected speaker, the cause may be multipath.
4. Loosen the antenna mounts and have someone orient the antenna for minimum distorted sound.



(a) Undesirable (b) Desirable waveform

Fig. 9 Multipath waveform

In case of difficulty

If your tuner should not perform as expected, consult the table below to see if the problem can be corrected before seeking help from your dealer or service representative.

General	Possible cause	Remedy
No sound	● Antenna is not connected. ● The pin-cord is not connected to amplifier correctly. ● Not received bradcast.	● Connect the FM outdoor antenna or FM T-shaped indoor antenna. ● Connect the pin-cord to an amplifier correctly. ● Adjust to the correct frequency accurately.
The stereo indicator blinks.	The connection of the antenna terminals is loose or the direction or the positioning of the antenna is unsatisfactory.	Connect the antenna terminals securely and check the direction or the positioning of the antenna.
Signal separation is bad even when the stereo broadcast is received with the stereo indicator lit.	QUIETING CONTROL knob is set to DISTANCE side (left side).	Set to NORMAL (right side).
Occurs during FM reception only	**Possible cause**	**Remedy**
Hiss that gets worse in stereo reception.	Very weak antenna input signal.	Consider an outdoor antenna installation. In areas remote from the transmitter a 5 to 8 element antenna designed exclusively for FM is suggested.
Rhythmic static or popping noises.	Automobile ignition noise, especially evident when receiving weak signals.	Review antenna installation. Site the antenna as far from the street as possible and use coaxial cable.
The stereo indicator does not light during FM stereo reception.	The signal is extremly weak so that the tuner sets itself monaural mode.	Install the outdoor FM antenna and receive the signal enoughly.

Specifications

– EIA –

[FM tuner section]

Tuning frequency range	87.5 MHz to 108 MHz	
Antenna impedance	75 ohms unbalanced	
	DISTANCE	**DIRECT**
Usable sensitivity (IHF)	10.8 dBf (0.95 μV)	31.2 dBf (10 μV)
50 dB quieting sensitivity (IHF)		
Mono	16.2 dBf (1.8 μV)	36.3 dBf (18 μV)
Stereo	38.8 dBf (24 μV)	58.8 dBf (240 μV)
Total harmonic distortion	**WIDE**	**NARROW**
Mono: 100 Hz	0.007%	0.02%
1,000 Hz	0.004%	0.01%
50 Hz to 10,000 Hz	0.009%	0.04%
Stereo: 100 Hz	0.015%	0.04%
1,000 Hz	0.008%	0.03%
50 Hz to 10,000 Hz	0.04%	0.15%
Signal-to-Noise ratio (85 dBf IHF)		
Mono	92 dB	
Stereo	86 dB	
(65 dBf)		
Mono	92 dB	
Stereo	76 dB	
	WIDE	**NARROW**
Capture ratio	1.0 dB	2.5 dB
Alternate channel selectivity (IHF: ±400 kHz)	70 dB	100 dB
Stereo separation		
1,000 Hz	70 dB	58 dB
50 Hz to 10,000 Hz	55 dB	45 dB
15,000 Hz	45 dB	40 dB
Frequency response	20 Hz to 15,000 Hz ±0.5 dB	
Image rejection ratio	80 dB	
IF rejection ratio	110 dB	
Spurious rejection ratio	100 dB	
AM suppression ratio	70 dB	
Sub carrier suppression ratio	70 dB	
Output level/impedance **at 1,000 Hz, 100% dev.**		
Fixed	0.6 V/2.3 kΩ	
Variable	1.2 V/1.0 kΩ (MAX.)	
Multipath output		
Vertical	0.05 V/10 kΩ	
Horizontal	0.6 V/10 kΩ	

[General]

Power consumption	25 W
Dimensions	W: 440 mm (17-5/16")
	H: 88.5 mm (3-7/16")
	D: 327 mm (13-1/4")
Weight (Net)	5.3 kg (11.7 lb)

– IEC/NF –

[FM tuner section]

Tuning frequency range	87.5 MHz to 108 MHz	
Antenna impedance	75 ohms unbalanced	
Sensitivity (DIN)		
Mono: S/N 26 dB, 40 kHz dev.	0.9 μV	
Stereo: S/N 46 dB, 46 kHz dev.	20 μV	
Limiting level		
–3 dB point, 40 kHz dev.	0.45 μV	
Total harmonic distortion (DIN)	**WIDE**	**NARROW**
Mono: 1 kHz, 40 kHz dev.	0.01%	0.03%
Stereo: 1 kHz, 46 kHz, dev.	0.04%	0.1%
Signal-to-Noise ratio		
Weighted		
Mono: 40 kHz dev., 1 mV input	82 dB	
Stereo: 46 kHz dev., 1 mV input	67 dB	
Unweighted		
Mono: 40 kHz dev., 1 mV input	78 dB	
Stereo: 46 kHz dev., 1 mV input	67 dB	
	WIDE	**NARROW**
Capture ratio	2.0 dB	3.5 dB
Alternate channel selectivity		
±300 kHz 20 dB input (DIN)	55 dB	80 dB
Stereo separation		
1 mV input (DIN)		
250 Hz	60 dB	50 dB
1 kHz	62 dB	50 dB
6.3 kHz	52 dB	40 dB
12.5 kHz	45 dB	33 dB
Frequency response	20 Hz to 15 kHz ±0.5 dB	
Image rejection ratio	80 dB	
IF rejection ratio	110 dB	
Spurious rejection ratio	100 dB	
AM suppression ratio	70 dB	
Sub carrier suppression ratio		
19 kHz: 46 kHz dev.	55 dB	
38 kHz: 46 kHz dev.	70 dB	
Output level/impedance **at 1,000 Hz, 100% dev.**		
Fixed	0.6 V/2.3 kΩ	
Variable	1.2 V/1.0 kΩ (MAX.)	
Multipath output		
Vertical	0.05 V/10 kΩ	
Horizontal	0.6 V/10 kΩ	

[General]

Power consumption	25 W
Dimensions	W: 440 mm
	H: 88.5 mm
	D: 327 mm
Weight (Net)	5.3 kg

Note:

We follow a policy of continuous advancements in development. For this reason specifications may be changed without notice.